REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-7 and 9-15 are presently active in this case. The present Amendment amends Claims 1, 6-7 and 9, cancels Claim 8 and adds new Claims 10-15 without introducing any new matter and cancels Claim 8.

The outstanding Office Action objected to the specification because of informalities. Claims 1-9 were rejected under 35 U.S.C. §103(a) as unpatentable over Coleman et al. (U.S. Patent No. 4,857,856, herein "Coleman") in view of Wang et al. (U.S. Patent No. 6,466,034, herein "Wang"). Claims 7-9 were rejected under 35 U.S.C. §103(a) as unpatentable over Coleman in view of Wang and further in view of Mimeault et al. (U.S. Patent No. 5,455,506, herein "Mimeault").

Initially, Applicant respectfully requests that reference AW cited in the Information Disclosure Statement filed February 25, 2004 be acknowledged as having been considered in the next Office Action.

In response to the objections to the Equation at page 2, line 19 of the specification, the Equation is amended to replace "ZI" with "Z1" and "ST" with "ZT," to be made consistent with the rest of the specification. In light of their formal nature, the changes to the specification do not raise a question of new matter.

In order to vary the scope of protection in the claims, new Claims 10-15 are added. New Claims 10-12 depend upon independent Claim 1 and recite features regarding the three different frequency ranges.[1] New Claims 13-15 depend upon Claim 5 and recite features regarding the fourth, fifth and sixth parameter, respectively.[2] Since the new claims find

[1] Finds non-limiting support in Applicant's original Claim 4.
[2] Finds non-limiting support in Applicant's original Claim 6.

support in the disclosure as originally filed, they are not believed to raise a question of new matter.

In response to the rejection of Claims 1-9 under 35 U.S.C. §103(a) over Coleman and Wang and to clarify Applicant's invention, independent Claim 1 is amended to further recite the steps of "associating at least one diagnosis code with each of said three first parameters and said relative variation of said fourth parameter, and determining the presence of the fault and identifying said fault by comparing each diagnosis code with a reference code." The amendment to Claim 1 finds non-limiting support in the disclosure as originally filed, for example in the specification at page 5, lines 17-18 and 26-29, at page 9, lines 5-6 and at page 11, lines 1-3. Further, independent Claim 1 and Claims 7 and 9 are amended to correct minor formalities. In light of these amendments, Applicant respectfully requests reconsideration of the outstanding rejections and traverses the rejections, as discussed next.

Briefly recapitulating, Applicant's invention, according to amended Claim 1, relates to a method of diagnosing a fault on a transformer winding comprising the steps of: measuring the impedance on the winding as a function of frequency; comparing the impedance measurement with a reference measurement represented in the form of a second voltage gain, the comparison including a step of calculating three first parameters, each of the three first parameters being a *correlation coefficient* between the first and second gains over *three different frequency ranges*; determining the relative variation of at least a fourth parameter, the fourth parameter being a physical magnitude characteristic of the transformer; associating at least one diagnosis code with each of the three first parameters and the relative variation of the fourth parameter, and determining the presence of the fault and identifying the fault by comparing each diagnosis code with a reference code.

Applicant's invention improves upon conventional methods of diagnosing a fault on transformer windings because the claimed method allows to increase the number of detectable faults and also distinguish between different faults.[3]

Turning now to the applied references, the Coleman patent discloses a method of testing transformers by monitoring the displacement of a conductor in a winding by injecting a high-frequency AC signal into the conductor and by observing the amplitude modulation of the high-frequency signal.[4] Coleman's method uses resonant frequencies in the region of the stray inductances and capacitances.[5]

Coleman, however, fails to teach or suggest Applicant's claimed step of identifying a fault by comparing a diagnosis code with a reference code. Further, Coleman fails to teach or suggest Applicant's claimed step of calculating a correlation coefficient over three different frequency ranges. In particular, and as acknowledged by the outstanding Office Action,[6] Coleman fails to teach or suggest the claimed calculating of three first parameters, each of the three first parameters being a correlation coefficient, between the first and second gains, ***over three different frequency ranges***. The outstanding Office Action rejects Applicant's Claims 1-9 based on the proposition that the Wang patent discloses the above feature,[7] and that it would have been obvious to modify Coleman by importing this feature from Wang to arrive at Applicant's claimed invention. Applicant respectfully submits, however, that Wang fails to disclose the above feature related to calculating three first parameters, each of the three first parameters being a correlation coefficient, between the first and second gains over three different frequency ranges, as next discussed.

The outstanding Office Action relies on Wang's text at column 1, lines 9-10. This passage of Wang recites that small deformations are detected in the windings over a broad

[3] See Applicant's Specification at page 3, lines 24-27.
[4] See Coleman for example in the Abstract.
[5] See Coleman for example column 4, lines 2-6.
[6] See outstanding Office Action at page 3, lines 9-12.
[7] See outstanding Office Action at page 4, lines 3-5.

frequency range (1kHz to 20Mhz). Reading Wang, a person of ordinary skill in the art would understand that detecting transformer winding movement over a broad frequency range, as taught by Wang, ***is not*** calculating three first parameters for comparing an impedance measurement, where each of the three first parameters are correlation coefficients, between the first and second gains over three different frequency ranges, as claimed by Applicant.[8] As explained in Wang, the test signals include the signal frequencies throughout the range of about 1kHz to about 20MHz. Accordingly, test signals including signal frequencies ***throughout the range of 1kHz to 20MHz*** as taught by Wang ***are not*** calculating three first parameters, each of the three first parameters being a correlation coefficient, between said first and second gains ***over three different frequency ranges***, as would be required to meet Applicant's claimed feature. Therefore, even if the combination of Coleman and Wang is assumed to be proper, the combination fails to teach every element of the claimed invention. Specifically, the combination fails to teach the claimed correlation coefficients over three different frequency ranges. Accordingly, Applicant respectfully traverses, and requests reconsideration of, this rejection based on these patents.[9]

In response to the rejection of dependent Claims 7-9 under 35 U.S.C. §103(a) over Coleman in view of Wang and further in view of Mimeault, Applicant respectfully traverses the obviousness rejection based on these references for two reasons: first, the combination fails to teach or suggest the feature discussed above regarding independent Claim 1. Specifically, the combination fails to teach or suggest calculating three first parameters, each of the three parameters being a correlation coefficient, between the first and second gains over three different frequency ranges. Second, there is insufficient evidence for a motivation to modify Coleman's method of testing transformers with high-frequency signals by

[8] See Wang, for example, at column 4, lines 33-43.
[9] See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

monitoring the displacement of the conductors by incorporating Mimeault's testing of transformers for power distribution lines with a center tap ground connector *to identify primary and secondary windings*, for the following reasons.[10]

The outstanding Office Action states that the proposed modification would have been obvious "to include the teachings of Mimeault in the testing method of Coleman and Wang in order to accurately provide a concise method of identifying types of faults and clearly identifying the windings."[11] The record, however, fails to provide the required ***evidence*** of a motivation for a person of ordinary skill in the art to perform such modification. While the Mimeault may provide a reason for using the comparison of measured values with predetermined constants to identify the primary and secondary windings of a transformer connected to a distribution line,[12] Mimeault fails to suggest why a person of ordinary skill in the art would be motivated to incorporate such a feature in a method of testing transformers to monitor mechanical displacement of the windings such as the one disclosed in the Coleman. In particular, Coleman uses high frequency signals in order to monitor the displacements of the windings by observing the modulation of the amplitude of the high-frequency signal. Mimeault, however, does not suggest that the comparison of measured 60Hz AC voltages applied to the phases of a transformer with predetermined constants would work in Coleman's observation of the amplitude modulation of a high frequency signal. Further, Mimeault does not state that Coleman's observation of the modulation of the high frequency signals needs the "determination of plurality of diagnosis codes, each of said codes

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[10] See MPEP 2143.01 stating "[o]bviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art," (citations omitted). See also MPEP 2144.08 III stating that "[e]xplicit findings on motivation or suggestion to select the claimed invention should also be articulated in order to support a 35 U.S.C. 103 ground of rejection. . . Conclusory statements of similarity or motivation, without any articulated rational or evidentiary support, do not constitute sufficient factual findings."

[11] See outstanding Office Action at page 6, lines 9-12.

[12] See Mimeault in the Abstract and in column 3, lines 19-25.

indicating whether a respective one of said parameters belongs to a predetermined range of values, wherein the fault is a function of the diagnosis code."[13]

In addition, Coleman is not concerned with detecting if a transformer is short-circuited or open-circuited, and with identifying the primary and secondary windings. Instead, Coleman is concerned with monitoring the displacement of the conductor in a winding. Coleman states that its structure already achieves the goal of determining parameters of the displacement of the conductors.[14] Coleman does not suggest that further improvement is desired, nor that another feature should be added to further improve the mechanical displacement monitoring. In particular, Coleman does not suggest adding predetermined constants for identifying the primary and secondary windings of a transformer, such as those disclosed in Mimeault.

The Coleman and Mimeault patents, therefore, do not provide the motivation to perform the proposed modification of the Coleman method. In other words, an attempt to bring in the isolated teaching of Mimeault's predetermined constants into Coleman would amount to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.[15] While the required evidence of motivation to combine need not come from the applied references themselves, the evidence must come from *somewhere* within the record.[16] In this case, the record fails to support the proposed modification of Coleman.

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[13] See outstanding Office Action on page 6, lines 3-6
[14] See Coleman, for example, in the Abstract, lines 11-15.
[15] See In re Ehrreich 590 F2d 902, 200 USPQ 504 (CCPA, 1979) (stating that patentability must be addressed "in terms of what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art," and that one "must consider the entirety of the disclosure made by the references, and avoid combining them indiscriminately.")
[16] In re Lee, 277 F.3d 1338, 1343-4, 61 USPQ2d 1430 (Fed. Cir. 2002) ("The factual inquiry whether to combine references ... must be based on objective evidence of record. ... [The] factual question of motivation ... cannot be resolved on subjective belief and unknown authority. ... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion").

The U.S. Court of Appeals for the Federal Circuit recently vacated a rejection under 35 U.S.C. §103(a)based on similar grounds.[17] In vacating a rejection, the Court stated:

> The record reflects that the examiner and the Board have managed to find motivation for substituting one type of memory for another ***without providing a citation of any relevant, identifiable source of information justifying such substitution***. The statements made by the Examiner, upon which the Board relied, amount to no more than conclusory statements of generalized advantages and convenient assumptions about skilled artisans. At least under the MPEP then in effect, such statements and assumptions are inadequate to support a finding of motivation, which is a factual question that cannot be resolved on "subjective belief and unknown authority." *Lee*, 277 F.3d at 1344. Under such circumstances, with respect to core factual findings, "the Board ***must point to some concrete evidence in the record in support***" of them, rather than relying on its assessment of what is "well recognized" or what a skilled artisan would be "well aware." (emphasis added)

In rejecting a claim under 35 U.S.C. §103(a), the USPTO must support its rejection by "substantial evidence" within the record,[18] and by "clear and particular" evidence[19] of a suggestion, teaching, or motivation to combine the teachings of different references. As discussed above, there is no substantial evidence, nor clear and particular evidence, within the record of motivation for modifying the Coleman method by incorporating Mimeault's predetermined constants. Without such motivation and absent improper hindsight reconstruction,[20] a person of ordinary skill in the art would not be motivated to perform the proposed modification, and Claims 7-9 are believed to be non-obvious and patentable over the applied references.

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[17] In re Beasley, 2004 U.S. App. LEXIS 25055 (Fed. Cir. December 2004)

[18] In re Gartside, 203 F3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000) (holding that, consistent with the Administrative Procedure Act at 5 USC 706(e), the CAFC reviews the Board's decisions based on factfindings, such as 35 U.S.C. § 103(a) rejections, using the 'substantial evidence' standard because these decisions are confined to the factual record compiled by the Board.)

[19] In re Dembiczak, 175 F3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("We have noted that evidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, although 'the suggestion more often comes from the teachings of the pertinent references.' The range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular.") (emphasis added).

[20] See MPEP 2141, stating, as one of the tenets of patent law applying to 35 USC 103, that "[t]he references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention."

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-7 and 9-15 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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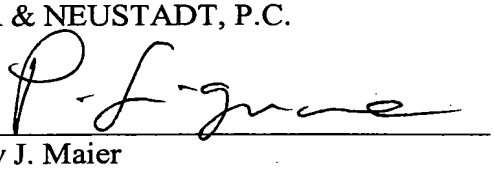

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